

PM2.5 Concentrations in Urban and Rural Areas



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California Regional PM_{2.5}/PM₁₀ Air Quality Study (CRPAQS)

- Monitoring in central and northern California for 14 months (December 1999 through February 2001)
- Integrated effort
 - Air quality and meteorological measurements (100 monitoring locations, 500 instruments, 600 parameters)
 - Emissions characterization
 - Data analysis and modeling

CRPAQS Monitoring Sites



Bakersfield



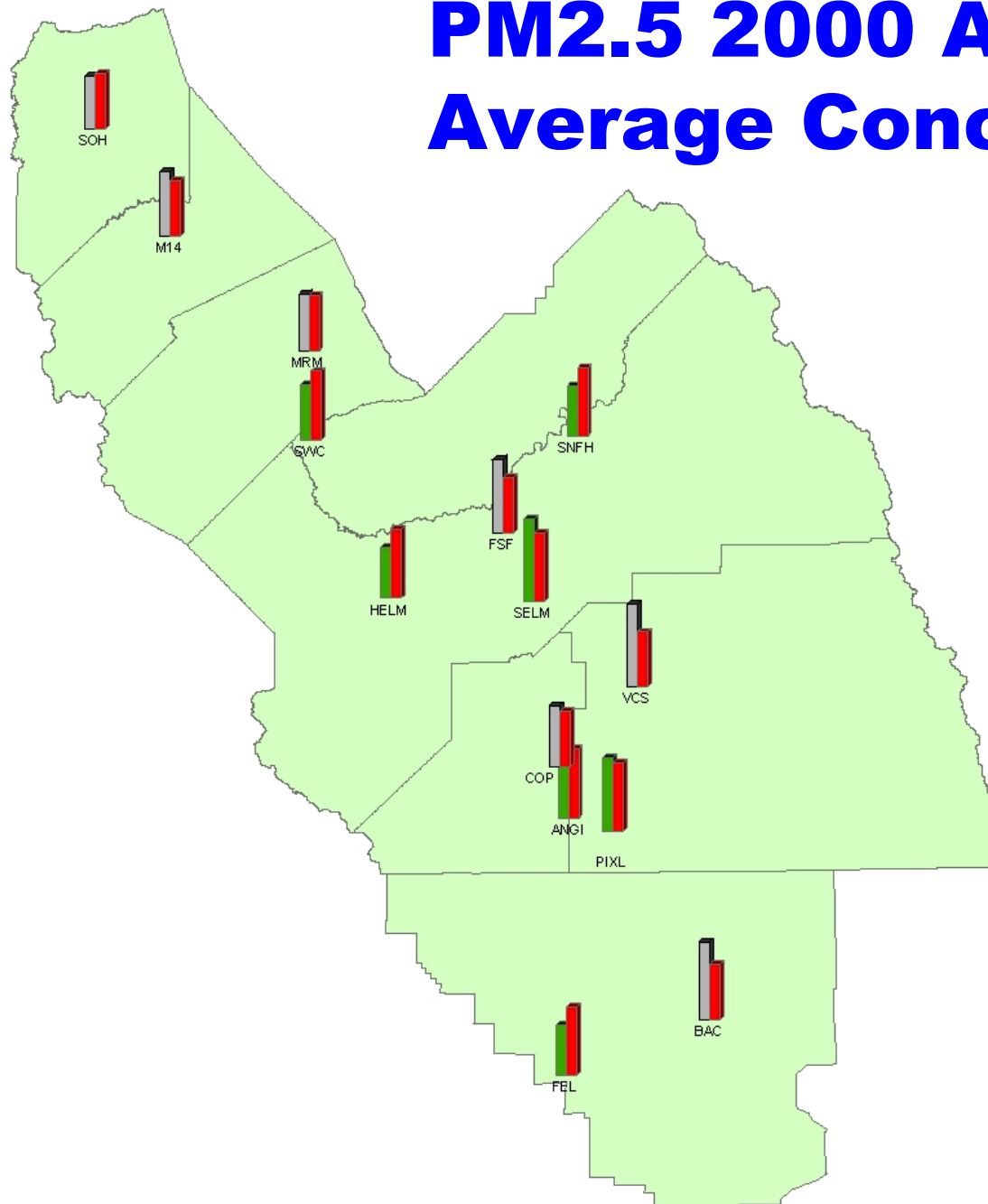
Angiola



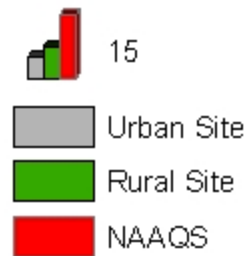
Overview

- PM2.5 concentrations
 - Annual average
 - Peak days
 - Temporal patterns
- Chemical composition
 - Annual average
 - Peak days
 - Temporal patterns

PM2.5 2000 Annual Average Concentrations

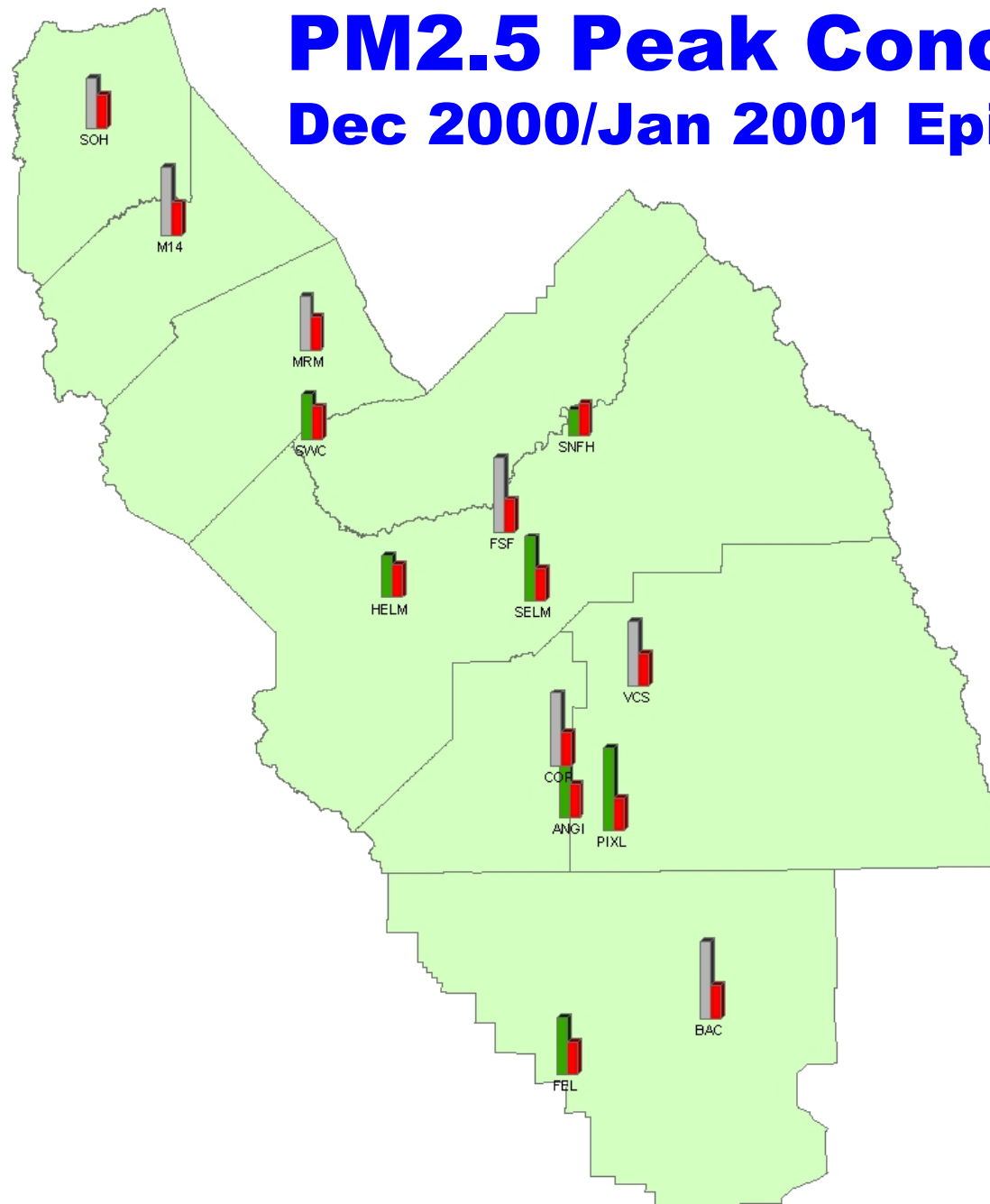


PM2.5 Annual Averages



PM2.5 Peak Concentrations

Dec 2000/Jan 2001 Episode



PM2.5 Maximum



65.5

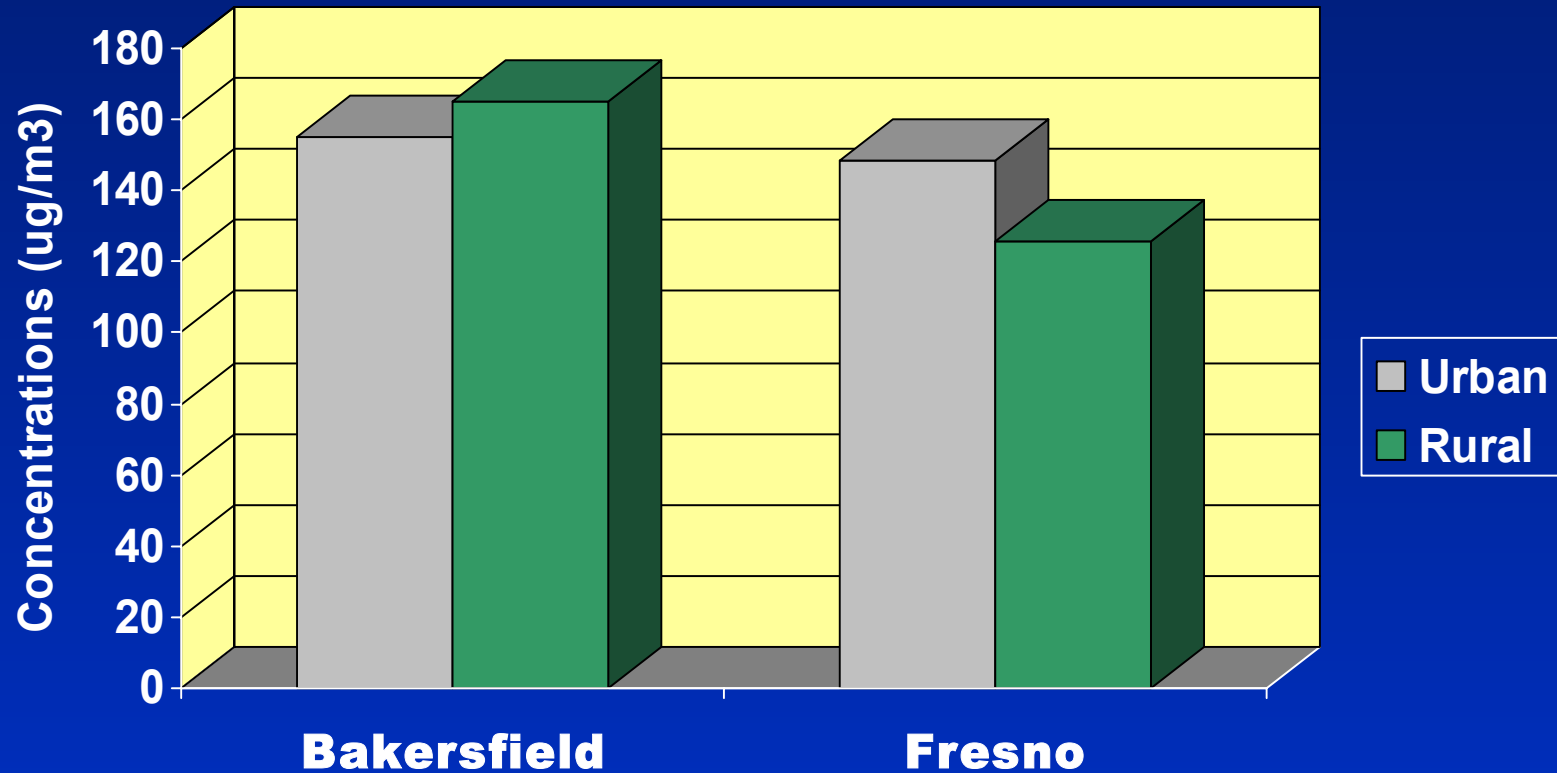
Urban Site

Rural Site

NAAQS

Peak PM_{2.5} Concentrations

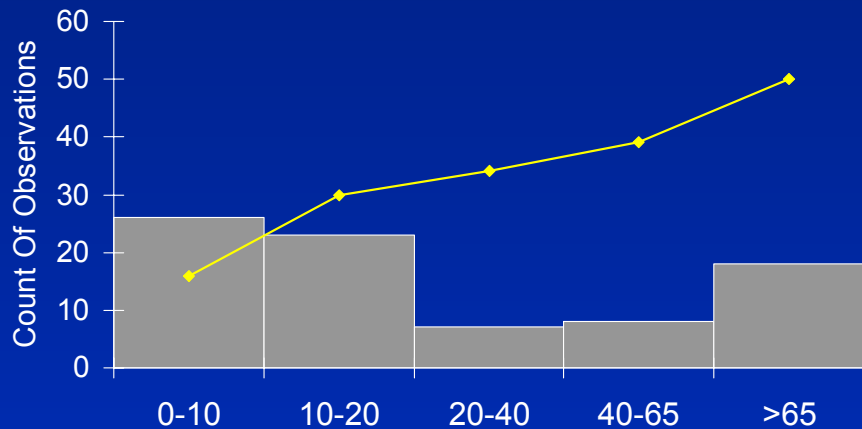
Dec 2000/Jan 2001 Episode



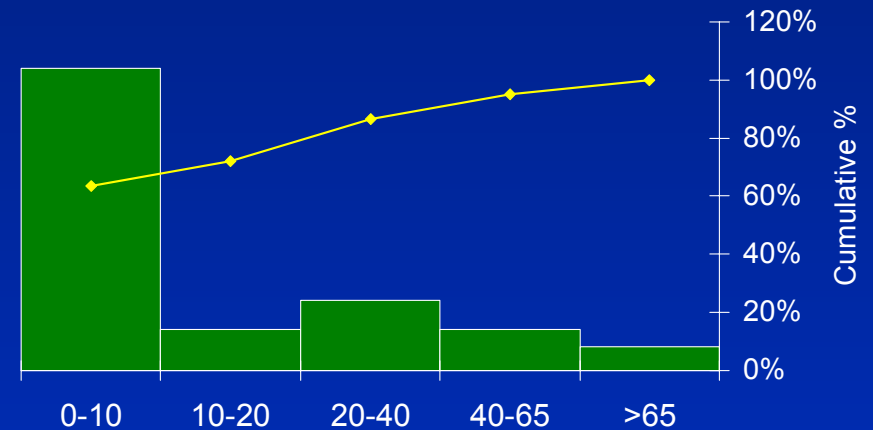
PM2.5 Concentrations

Fresno Area, 12/2/1999 - 2/3/2001

Urban



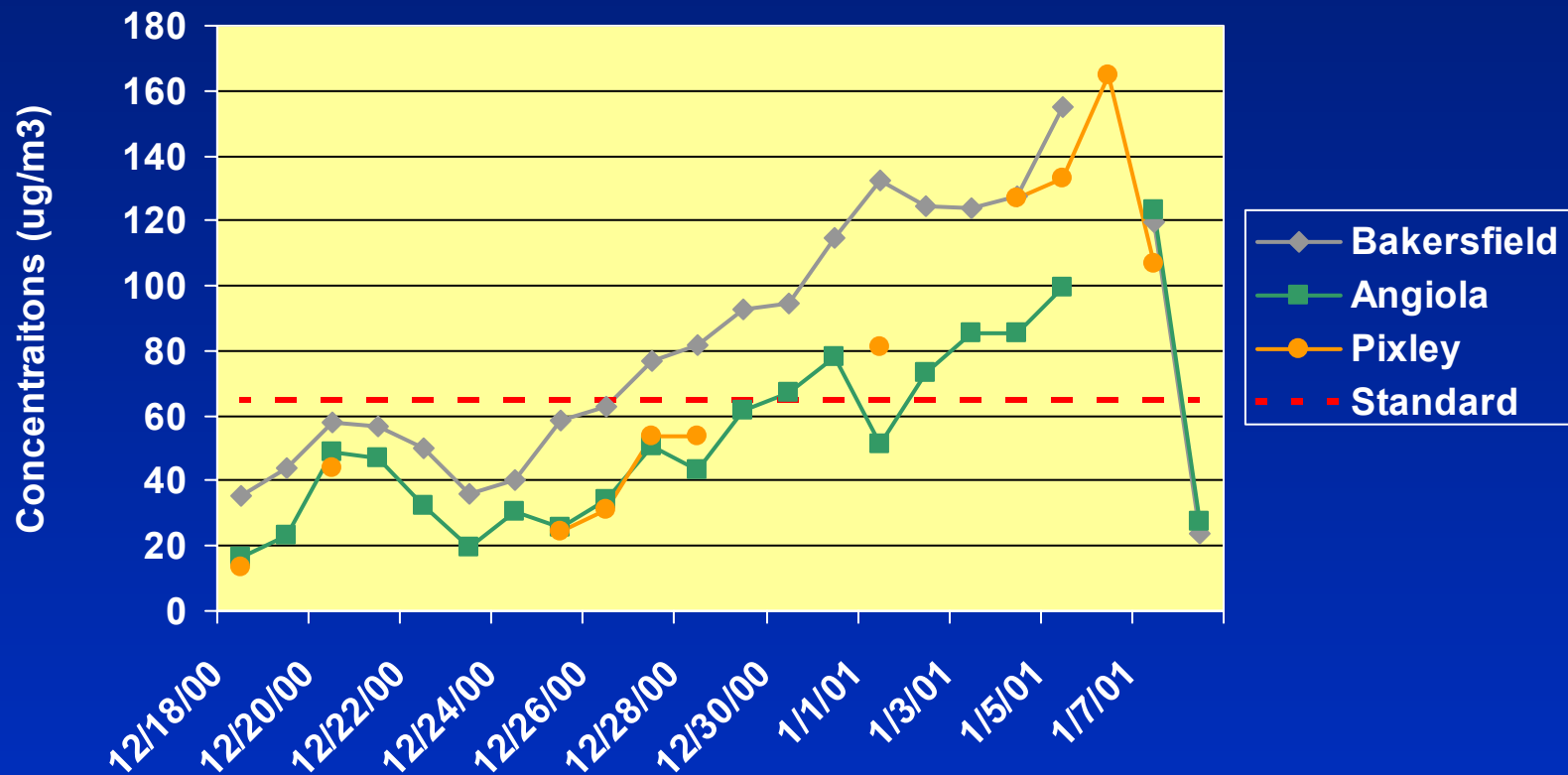
Rural



Concentration Range in $\mu\text{g}/\text{m}^3$

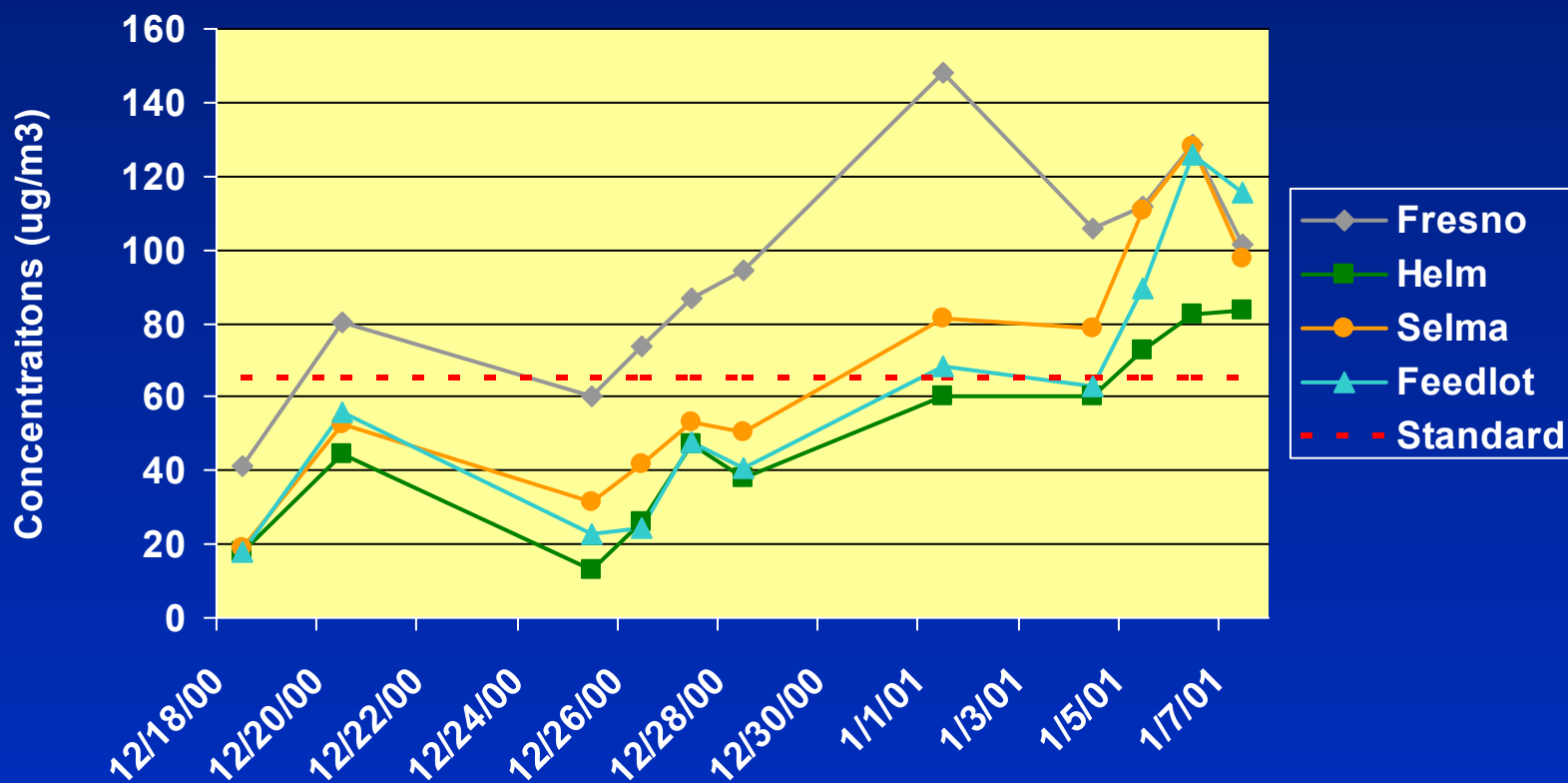
PM2.5 Concentrations

Bakersfield Area, Dec 2000/Jan 2001 Episode



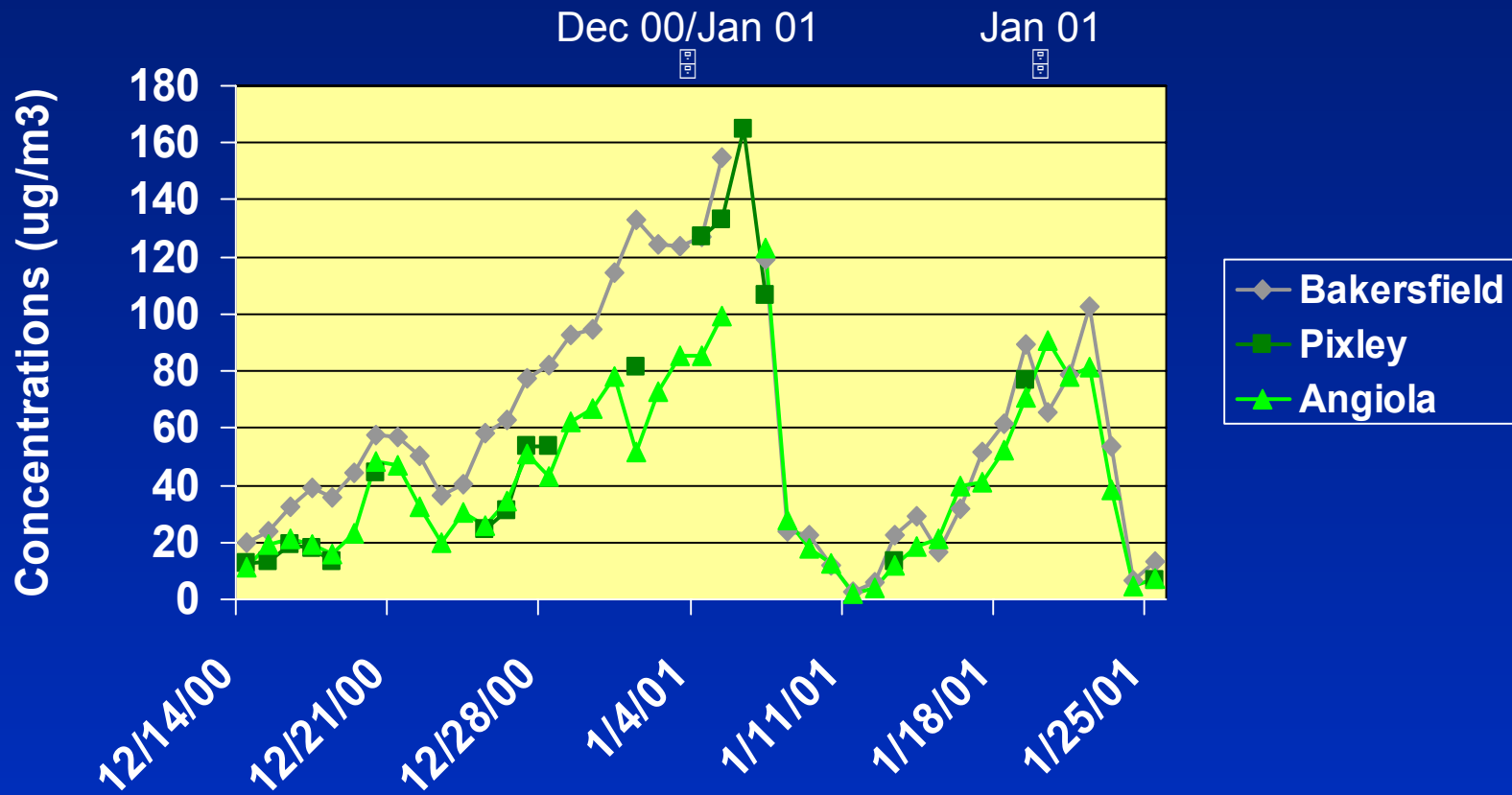
PM2.5 Concentrations

Fresno Area, Dec 2000/Jan 2001 Episode



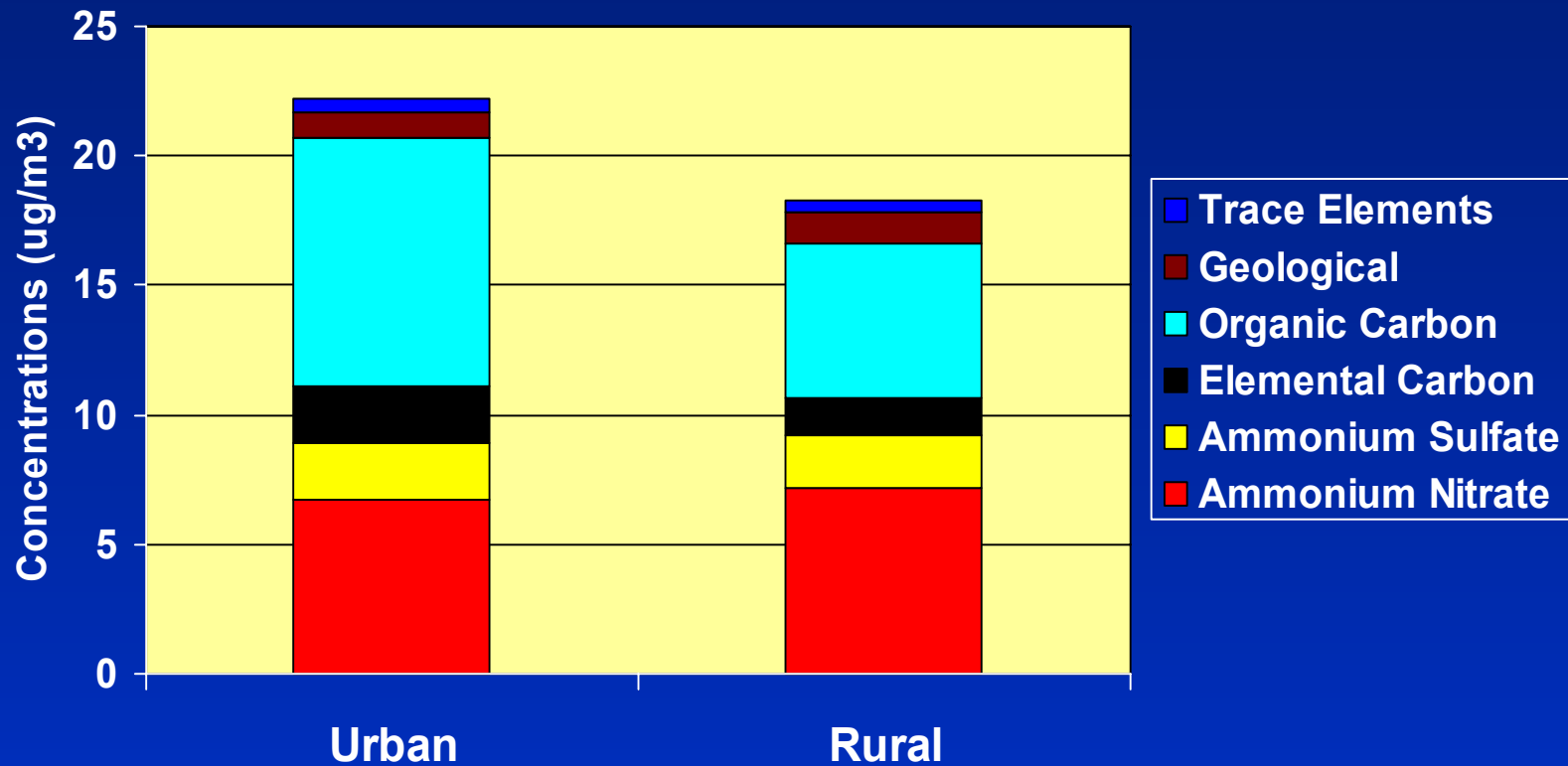
Temporal Patterns

Bakersfield Area



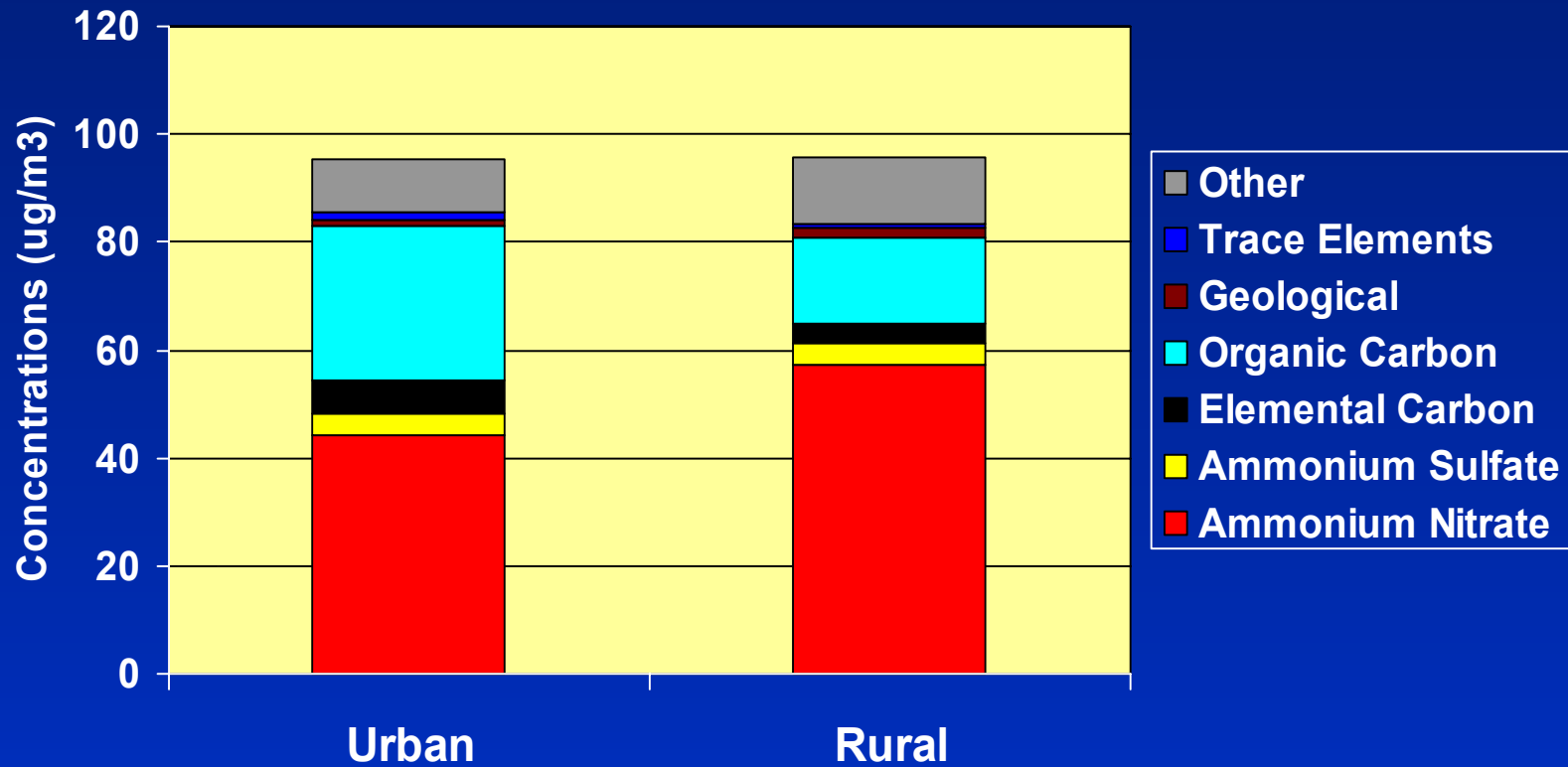
Chemical Speciation

2000 Annual PM_{2.5} Concentrations

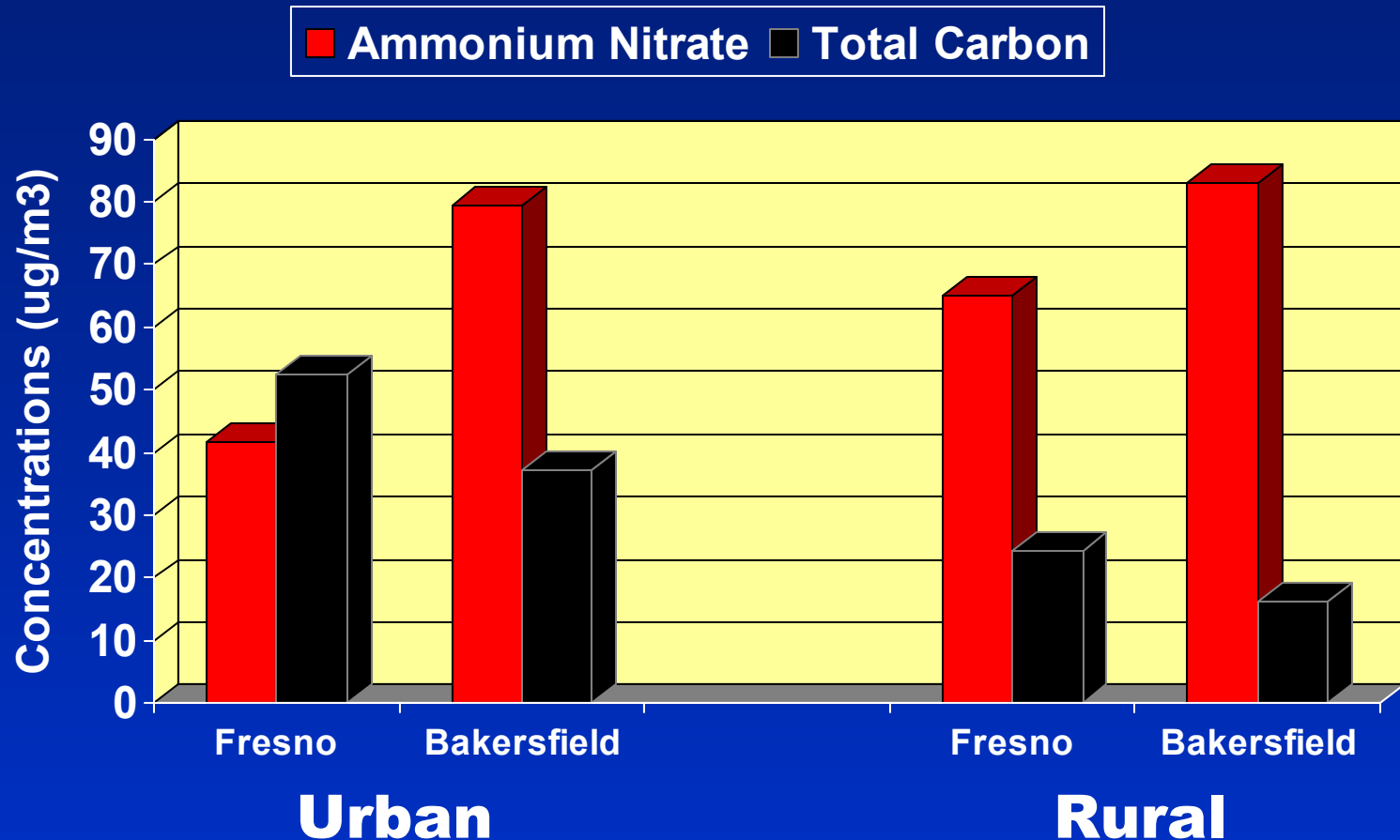


Chemical Speciation

Average PM2.5 Exceedance Day

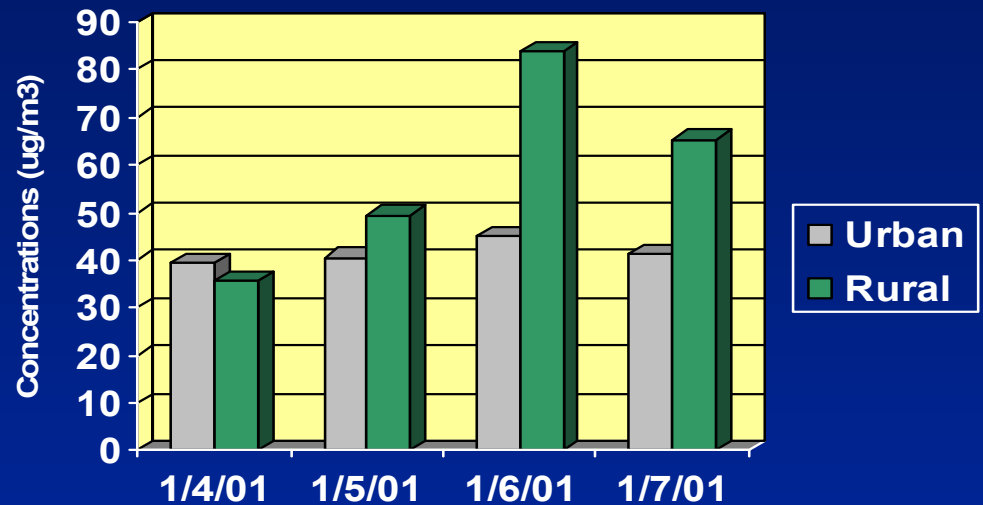


Average PM2.5 Exceedance

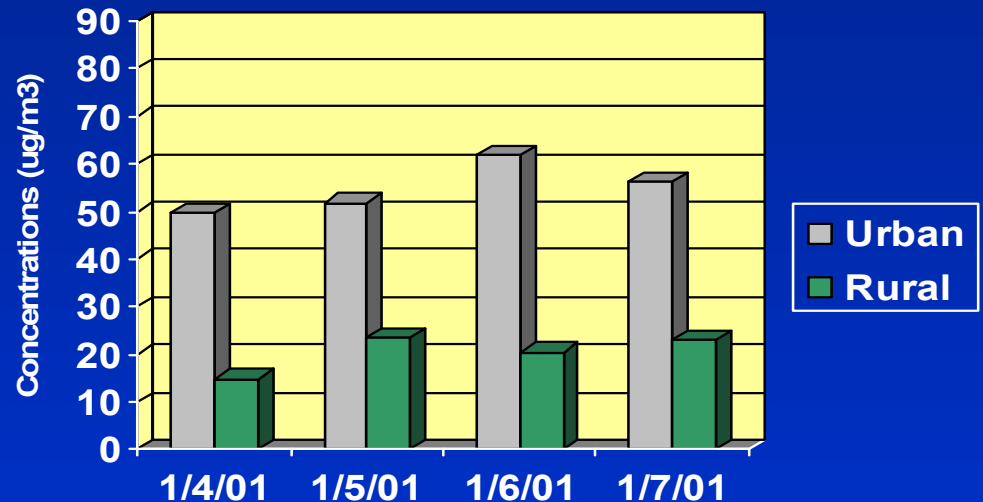


Differences Among Components at Fresno

Ammonium Nitrate

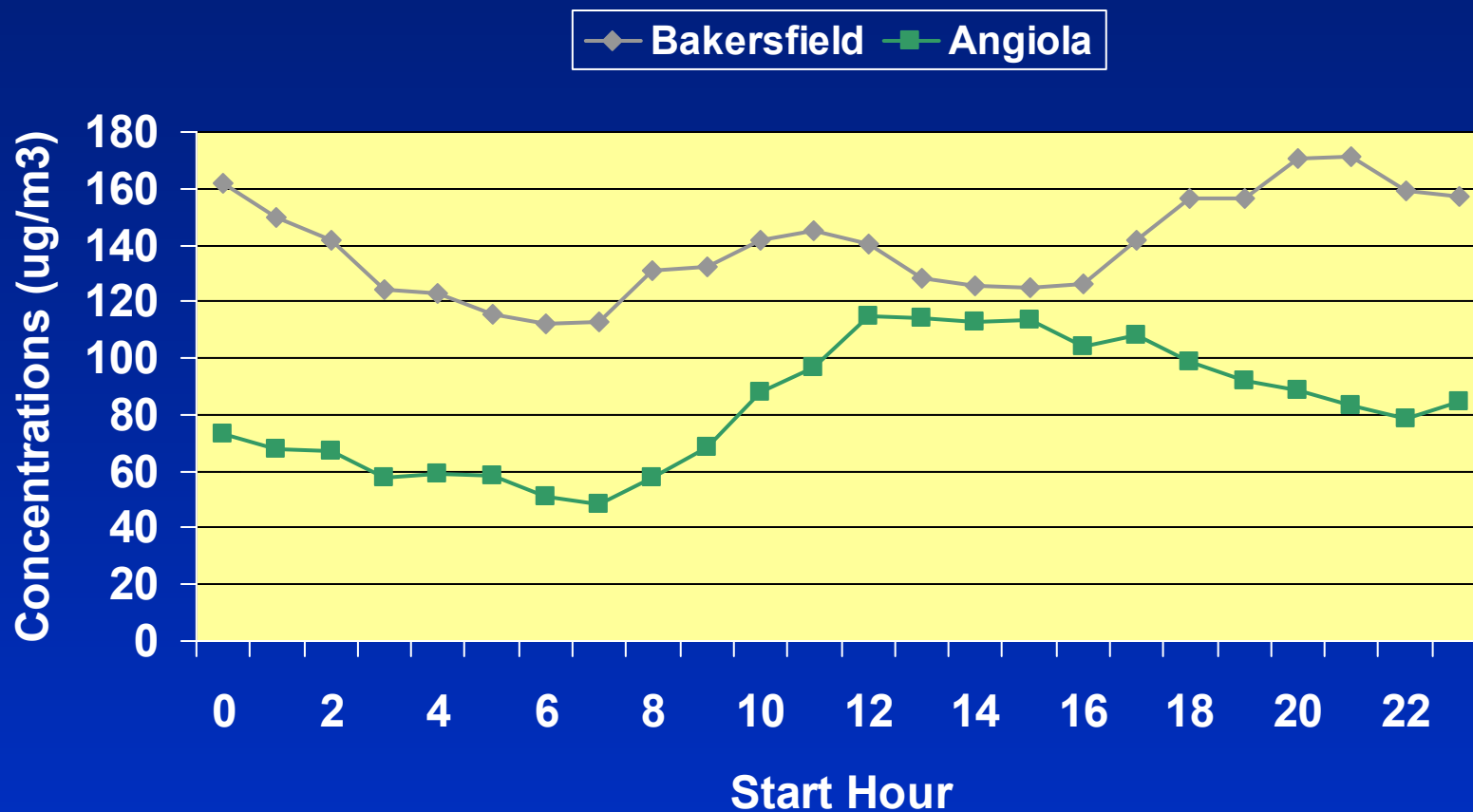


Total Carbon



Diurnal Pattern

PM2.5 Concentrations, January 1-6, 2001



Conclusions

- Annual average PM_{2.5} concentrations
 - Urban higher than rural
- Peak PM_{2.5} concentrations
 - Urban sites have more high days
 - Rural sites can have higher peaks
- Temporal patterns: Different scenarios depending on the weather
 - Rural delayed by few days or no delay

Conclusions

Chemical Composition

- Annual average
 - Carbon responsible for the difference in concentrations
- Peak day
 - Fresno: Dominated by carbon
 - Bakersfield: Dominated by ammonium nitrate
 - Rural: Heavily dominated by ammonium nitrate